

CLAIMS:

1. A multi-stack optical information carrier for recording information by means of an optical beam, said optical information carrier comprising

- a substrate layer,
- at least two recording stacks each comprising a recording layer,
- 5 - at least one spacer layer separating the at least two recording stacks, and
- a cover layer,

characterized in that the recording layers include a thermochromic material having temperature-dependent optical characteristics for selectively improving the sensitivity of the addressed recording layer during recording and/or read-out.

10

2. A multi-stack optical information carrier as claimed in claim 1, characterized in that said thermochromic material has a temperature-dependent reflection characteristic.

3. A multi-stack optical information carrier as claimed in claim 2, characterized
15 in that the refractive index of the thermochromic material is matched to the refractive index of said substrate and spacer layers.

4. A multi-stack optical information carrier as claimed in claim 2, characterized
20 in that the recording layers include two separate thermochromic materials having different degradation temperatures.

5. A multi-stack optical information carrier as claimed in claim 1, characterized in that said thermochromic material has a temperature-dependent absorption characteristic.

25 6. A multi-stack optical information carrier as claimed in claim 5, characterized in that the recording layers include a fluorescent material or are coated by a fluorescent material for emitting non-coherent fluorescent light in response to an incident optical beam during read-out, said fluorescent light carrying the information recorded in the addressed recording layer.

7. A multi-stack optical information carrier as claimed in claim 6, characterized in that the thermochromic functionality of said thermochromic material and the fluorescent functionality of said fluorescent material are combined in the same moiety.

5

8. A multi-stack optical information carrier as claimed in claim 1 or 6, characterized in that said thermochromic material and/or said fluorescent material are used in an inert matrix, said matrix being of a solid or semi-solid nature, in particular of an organic nature, polymeric nature or organic-based gel-type nature.

10

9. A multi-stack optical information carrier as claimed in claim 8, characterized in that said thermochromic material and/or said fluorescent material are used in said inert matrix by dissolution, by dispersion as separate solid or liquid phase, by adsorption on a different binder or carrier material or by complexation.

15

10. A multi-stack optical information carrier as claimed in claim 1, characterized in that said thermochromic material essentially comprises pure elongated pi-conjugated oligomers or polymers of pi-conjugated materials in a polymer matrix, in particular having a concentration of pi-conjugated material between 1 and 100%.

20

11. A multi-stack optical information carrier as claimed in claim 1, characterized in that said thermochromic material essentially comprises pH sensitive dye molecules and color developers.

25

12. A multi-stack optical information carrier as claimed in claim 1, characterized in that said thermochromic material further comprises a polar host material.

13. A multi-stack optical information carrier as claimed in claim 1, characterized in that said thermochromic material essentially comprises a polymer material in which spiropyrans, spirobichromenes or spirooxazines are comprised, in particular dissolved and having a concentration between 1 and 25%.

30

14. A multi-stack optical information carrier as claimed in claim 1, characterized in that said thermochromic material essentially comprises a polymer material in which

sterically hindered photochromic dyes are comprised, in particular dissolved and having a concentration between 1 and 25%.

15. A multi-stack optical information carrier as claimed in claim 1, characterized
5 in that said thermochromic material essentially comprises a polymer material in which thermochromic dyes, in particular cyanine or phthalocyanine dyes, are comprised, in particular dissolved and having a concentration between 1 and 25%.

16. A multi-stack optical information carrier as claimed in claim 1, characterized
10 in that said thermochromic material essentially comprises a dye material in which the dye molecules are aggregated, in particular forming J-type aggregates or H-type aggregates.

17. A multi-stack optical information carrier as claimed in claim 1, characterized
in that said recording layers further include as a recording material a phase-change material
15 or a write-once material.

18. A method of recording information on a multi-stack optical information carrier
as claimed in claim 1 by use of an optical beam, comprising the steps of directing said optical
beam at a first heating wavelength on the recording layer on which information shall be
20 recorded for heating said recording layer and directing said optical beam at a second writing
wavelength on the heated recording layer.